

APPENDIX D

Economic Appendix

1. This appendix explains the economic analysis undertaken by the Commission to evaluate the potential harms deriving from the increased vertical integration of regional sports programming networks and cable systems that may result from the transaction under review. It presents an economic model of a uniform price increase strategy. The model sets forth the most important determinants of the strategy's profitability. The model indicates that one of the most important elements is consumer response to an MVPD's failure to carry an RSN. Accordingly, the appendix describes the estimation of this response. We also assign values to the remaining variables in the model and calculate the signs and magnitudes of the changes in the individual markets due to the transactions.

I. A MODEL OF UNIFORM PRICE INCREASES

2. Standard economic models of raising rivals' costs assume that firms are able to engage in price discrimination. However, the Commission rules do not permit vertically integrated video programmers to engage in price discrimination except within certain narrow limits.¹ Accordingly, the standard models pertaining to raising rivals' costs do not fit the institutions of the multichannel video programming industry perfectly because the integrated firm would need to raise the costs of both rivals and non-rival firms in order to comply with the Commission's rules. However, a model is available, furnished by Lexecon, on behalf of DIRECTV. Lexecon's simple model of raising rivals' costs illustrates the process by which a vertically integrated RSN has an incentive to increase its prices when there is an increase in size of the MVPD with which it is integrated.² Using its framework, Lexecon estimates the maximum amount that a competing MVPD would be willing to pay for access to an integrated RSN. This amount would be the price that would make the competing MVPD indifferent as to whether to pay the price and carry the programming or decline to carry the programming and suffer a subscriber loss because the programming is not available.

3. The extent of subscriber losses when an MVPD does not carry particular programming is a critical factor in determining the price an MVPD is willing to pay for that programming. In turn, the loss of subscribers incurred by an MVPD that does not carry the programming is influenced by whether any competing MVPDs carry the programming. If a competing MVPD does carry the programming, the loss of subscribers is likely to be greater than if a competing MVPD does not carry the programming, because some fraction of the consumers who value the programming will switch to an MVPD that does carry the programming. Of course, even if none of the MVPDs in the market carry the programming, there still may be a loss in customers when particular programming is no longer offered, because MVPD service would be less valuable to some customers without the desired programming.

4. To determine the maximum amount a competing MVPD would be willing to pay for video programming, we compare the profits that the competing MVPD would earn if it carried the video programming with the profits that it would earn if it did not carry the programming. The maximum willingness to pay for the programming is the price that would yield the same level of profits regardless of whether the programming were carried.

5. The competing MVPD's profits from carrying or not carrying the video programming depend on whether the other MVPDs competing for subscribers in the market carry the programming. To assist

¹ For example, prices can be differentiated based on cost differentials. See 47 C.F.R. § 76.1002(b). In addition, the rules do not cover programming that is delivered to the headend entirely by terrestrial means. See 47 C.F.R. §§ 76.1000(h)-(i); 76.1002(b). Therefore, the uniform price increase analysis does not apply to such programming.

² DIRECTV Surreply, Ex. A at 12-16.

us in our analysis, we adopt a simplifying assumption used by Lexecon. We assume that other unintegrated MVPDs that serve the market would have the same willingness to pay as the competing MVPD and, therefore, whenever the price of the video programming is low enough to induce the competing MVPD to carry it, the other unintegrated MVPDs will also carry the video programming. If the price of the video programming is so high that the competing MVPD will not carry it, then we assume that the price will also be too high for other unintegrated MVPDs. Since the price of the video programming does not influence the carriage decision of the Applicant's MVPD, which is integrated with the video programming, we assume that the programming will always be carried by the Applicants.

6. Formally, the profits earned by the competing MVPD that carries the programming is equal to $\sigma^{++} \cdot N \cdot (\pi - P_0)$, where σ^{++} is the share of households purchasing service from the competing MVPD if all the MVPDs serving the market carry the programming; N is the number of households in the market; P_0 is the per subscriber price of the video programming at issue; and π is the profit the competing MVPD earns on an additional subscriber, excluding the price of the programming at issue.

7. The expression that represents the profits that the competing MVPD would earn if it did not carry the programming is more complex. We need to take into account that the other MVPDs' carriage decisions will depend on whether they are integrated with the programming network at issue. First, we consider the profits that would be earned in the portions of the market served by the competing MVPD and other unintegrated MVPDs. Since we have assumed that the other unintegrated MVPDs have the same willingness to pay as the competing MVPD, they will make the same carriage decision and, therefore they will also refuse to carry the programming. The profits the competing MVPD earns in areas of the market served by unintegrated MVPDs equals $\sigma^{--} \cdot N_0^U \cdot \pi$, where σ^{--} is the share of households purchasing service from the competing MVPD if all MVPDs serving this portion of the market do not carry the programming, and N_0^U is the number of households in the portion of the market that is served by unintegrated MVPDs. The profits the competing MVPD earns in areas of the market served by the Applicant is equal to $\sigma^{+-} \cdot N_0^I \cdot \pi$, where σ^{+-} is the share of households purchasing service from the competing MVPD if the competing MVPD does not carry the programming but the MVPD serving this portion of the market carries the programming, and N_0^I is the number of households in the portion of the market the Applicants serve. These two terms can then be combined to obtain the total profits that the competing MVPD would earn if it does not carry the programming at issue: $\sigma^{--} \cdot N_0^U \cdot \pi + \sigma^{+-} \cdot N_0^I \cdot \pi$. The maximum willingness to pay is:

$$P_0 = \pi \cdot \left[1 - \left(\frac{\sigma^{--}}{\sigma^{++}} \right) + \left(\frac{\sigma^{--} - \sigma^{+-}}{\sigma^{++}} \right) \cdot \left(\frac{N_0^I}{N} \right) \right] \quad (1)$$

This is the price that equalizes the profits of the competing carrier when it carries the programming and the profits earned when it does not carry the programming.³

8. We further modify this result by introducing the concept of bargaining power. It may not be possible for the Applicant's programming network to extract fully from the competing MVPD all of its additional profits earned from carrying the network. Therefore, we introduce a parameter for the bargaining power of the programmer, γ_0 , that lies between 0 and 1. DIRECTV's analysis implicitly assumes that γ_0 is equal to 1 and that the programmer can obtain a price equal to the MVPD's maximum willingness to pay. We allow for cases where this may not be true. Therefore the price that will be paid by the competing MVPD for the Applicant's programming is:

³ This result also assumes that all areas served by the competing MVPD are also served by other MVPDs so that $N \equiv N_0^U + N_0^I$.

$$P_0 = \gamma_0 \cdot \pi \cdot \left[1 - \left(\frac{\sigma^{--}}{\sigma^{++}} \right) + \left(\frac{\sigma^{--} - \sigma^{+-}}{\sigma^{++}} \right) \cdot \left(\frac{N_0^I}{N} \right) \right] \quad (2)$$

9. To examine the transactions' effect on the price of programming, we need to examine which of the elements in equation (2) might change due to the transactions. The number of households in the portion of the market that is served by the Applicant's cable operations, N_0^I , will change in those markets affected by the transactions. We will use N_1^I as the post-transaction value for the number of households in the portion of the market the Applicant serves. In addition, the level of bargaining power may change. We will use γ_1 to represent the bargaining power of the Applicant's programming network after the transactions. We do not believe the reactions of consumers, measured by the σ terms, are likely to change due to the transactions. Nor are the per subscriber profits, net of the cost of the programming at issue (π), likely to change due to the transactions. Therefore, the price of the Applicant's programming at issue following the transactions will be:

$$P_1 = \gamma_1 \cdot \pi \cdot \left[1 - \left(\frac{\sigma^{--}}{\sigma^{++}} \right) + \left(\frac{\sigma^{--} - \sigma^{+-}}{\sigma^{++}} \right) \cdot \left(\frac{N_1^I}{N} \right) \right] \quad (3)$$

10. Equations (2) and (3) can be combined to obtain the predicted increase in the price of the Applicant's programming due to the transactions. The percentage increase in the price of the affiliated video programming network is:

$$\frac{P_1 - P_0}{P_0} = \frac{\gamma_1 \cdot \left[1 - \left(\frac{\sigma^{--}}{\sigma^{++}} \right) + \left(\frac{\sigma^{--} - \sigma^{+-}}{\sigma^{++}} \right) \cdot \left(\frac{N_1^I}{N} \right) \right]}{\gamma_0 \cdot \left[1 - \left(\frac{\sigma^{--}}{\sigma^{++}} \right) + \left(\frac{\sigma^{--} - \sigma^{+-}}{\sigma^{++}} \right) \cdot \left(\frac{N_0^I}{N} \right) \right]} - 1 \quad (4)$$

Two simplifying assumptions can be used to illustrate the underlying behavior being modeled. One assumption is that the transactions do not influence the amount of bargaining power that the Applicant's video programming network possesses (i.e. $\gamma_0 = \gamma_1$). The second assumes that the share of households purchasing the competing MVPD's service is the same when neither it nor any other MVPD available in the area carries the video programming at issue and when the competing MVPD and any other MVPD available in the area do carry the video programming (i.e. $\sigma^{--} = \sigma^{+-}$). With these assumptions, the percentage increase in the price of the Applicant's video programming network becomes:

$$\frac{P_1 - P_0}{P_0} = \frac{N_1^I - N_0^I}{N_0^I} \quad (5)$$

11. Under these two simplifying assumptions the percentage increase in the uniform price of the Applicant's programming network is equal to the percentage increase in the households that are in the area served by the Applicant's cable systems.

II. ESTIMATING CONSUMER RESPONSES TO THE WITHHOLDING OF REGIONAL SPORTS PROGRAMMING

12. In order to evaluate the likelihood of uniform price increases, we need information on how consumers react when regional sports programming is not available from some of the MVPDs in a market. The model set forth above requires estimates of the number of subscribers who will shift in the event that highly valued sports programming is unavailable. We base our estimates of this effect on instances in which sports programming has been withheld from MVPDs.

13. There are three areas in the United States where regional sports programming networks are not offered for sale to DBS operators: Charlotte, North Carolina; Philadelphia, Pennsylvania; and San

Diego, California.⁴ We examine the fraction of television households subscribing to DBS service in these areas and use regression analysis to compare that to the fraction subscribing to DBS in locations where regional sports programming is available from DBS operators.

A. Empirical Model

14. We follow Wise and Duwadi (2005) in the specification of a model to examine DBS penetration and the variables that affect it.⁵ The model estimates the impact of cable prices, cable system characteristics, population demographics, and DBS program offerings on the percent of television households subscribing to DBS service. Each observation in our data corresponds to an incumbent cable system responding to the 2005 FCC Cable Price Survey.⁶ The survey provides information on the service rates and characteristics of the responding cable operators' cable systems. We use an estimate from Nielsen Media Research of the number of households subscribing to "alternative delivery systems" in a county to construct our measure of DBS penetration. Demographic variables are also available at the county level from the 2000 Census.

15. We use a partial log-linear functional form where the dependent and continuous independent variables are transformed using the natural logarithm.⁷ We estimate the following equation:

$$\text{LN DBS PENETRATION} = B_0 + B_1 \cdot \text{LN CABLE PRICE} + B_2 \cdot \text{LN CABLE CHANNELS} + B_3 \cdot \text{PHILLY} + B_4 \cdot \text{SANDIEGO} + B_5 \cdot \text{CHARLOTTE} + B_6 \cdot \text{KEYDMA} + B_7 \cdot \text{DBSOVERAIR} + B_8 \cdot \text{CABLECOMP} + B_9 \cdot \text{HDTV} + B_{10} \cdot \text{INTERNET} + B_{11} \cdot \text{LN INCOME} + B_{12} \cdot \text{LN MULTIDWELL} + B_{13} \cdot \text{LN LATITUDE} + \varepsilon$$

Where:

LN DBS PENETRATION is the log of the percent of television households subscribing to an "alternative delivery system" in the county containing the responding cable system;

LN CABLE PRICE is the log of the recurring monthly charge for the basic tier plus the next additional package of channels offered by the responding cable system;⁸

LN CABLE CHANNELS is the log of the number of cable channels offered by the responding cable system on the basic tier plus the next additional package of channels;

PHILLY is an indicator variable taking on the value of 1 when the responding cable system is located in the Philadelphia DMA;

SANDIEGO is an indicator variable taking on the value of 1 when the responding cable system is located in the San Diego DMA;

CHARLOTTE is an indicator variable taking on the value of 1 when the responding cable system is

⁴ For this purpose, we include in the definition of "regional sports programming network" only those regional networks that carry regular season sporting events from Major League Baseball, the National Basketball Association, the National Football League, or the National Hockey League.

⁵ Andrew S. Wise and Kiran Duwadi, *Competition between Cable Television and Direct Broadcast Satellite: The Importance of Switching Costs and Regional Sports Networks*, 1 J. COMPETITION L. & ECON. 679 (2005).

⁶ We eliminate observations from cable systems that do not offer digital programming. This eliminates 22 of the 682 cable systems with complete data.

⁷ This transformation allows the coefficients on the continuous variables to be interpreted as elasticities.

⁸ More than 90% of subscribers purchase at least the first two tiers of services. In addition, most regional sports networks are carried on one of these two tiers.

located in the Charlotte DMA;

KEYDMA is an indicator variable taking on the value of 1 when the responding cable system is located in a DMA that is home to a professional sports team that is a member of Major League Baseball, the National Basketball Association, the National Football League, or the National Hockey League;

DBSOVERAIR is an indicator variable taking on the value of 1 when one or both DBS operators offer local broadcast signals in the DMA where the responding cable system is located;

CABLECOMP is an indicator variable taking on the value of 1 when the cable system competes against a second cable operator;

HDTV is an indicator variable taking on the value of 1 when the responding cable system offers one or more channels in high-definition format;

INTERNET is an indicator variable taking on the value of 1 when the responding cable system offers high-speed Internet access;

LN INCOME is the log of the median household income in the county containing the responding system;

LN MULTIDWELL is the log of the percent of households in multiple dwelling units (“MDUs”) in the county containing the responding system;⁹ and

LN LATITUDE is the log of the latitude of the county containing the responding system.

16. We use instrumental variables to account for possible endogeneity of the cable price and the number of cable channels. We use the natural logs of system capacity (MHz) and the number of subscribers served nationally by the cable system owner, as well as the number of networks with which the cable system owner is vertically integrated, as excluded instruments. We perform estimation using the generalized method of moments.

B. Results

17. Table A-1

DBS Penetration and RSN Access

Independent Variables	Dependent Variable: LN DBS PENETRATION	
	Coefficient	z-statistic
LN CABLE PRICE	2.37*	2.32
LN CABLE CHANNELS	-1.10*	-2.56
PHILLY	-0.52*	-6.47
SANDIEGO	-0.41*	-4.90
CHARLOTTE	-0.23	-1.57
KEYDMA	0.13*	2.30
DBSOVERAIR	-0.08	-1.31
CABLECOMP	0.34	1.41
HDTV	-0.13	-1.64
INTERNET	-0.09	-0.76
LN INCOME	-0.36*	-2.91

⁹ We define a multiple dwelling unit as one that contains two or more housing units in one building.

LN MULTIDWELL	-0.39*	-10.40
LN LATITUDE	-0.03	-0.17
CONSTANT	-0.92	-0.33
Observations	676	
Centered R-Squared	0.22	
F-Statistic (13, 662)	40.57	
Hansen J Statistic	24.56	

* - significant at 95% confidence level

18. The results from the estimation indicate that DBS penetration is lower in two of the three areas where DBS operators have not been able to carry regional sports programming even after accounting for other factors that affect consumers' decisions to purchase DBS service. In the case of the independent variables that are expressed as logarithms, the estimated coefficients represent elasticities — the percent change in the DBS penetration rate resulting from a one percent change in the value of the independent variable. This is not true for indicator variables. They measure the change in the natural logarithm of the DBS penetration rate when the indicator variable takes on a value of 1. Therefore, to evaluate the economic significance of access to regional sports programming by DBS operators, we would like to know the impact of unavailability of RSNs on the percent of households purchasing DBS service. We calculate this value by using the regression equation coefficients and the underlying data to predict the log of the DBS penetration rate in Philadelphia and San Diego.¹⁰ We calculate the weighted average of this value using the number of basic subscribers to the responding cable system as weights. The predicted DBS penetration rate in the DMA is the exponential of this value. We calculate this value a second time assuming that the regional sports programming is available (variable PHILLY = 0 and variable SANDIEGO = 0). We find that, in Philadelphia, the regression predicts a DBS penetration rate of 8.6% when the regional sports programming is not available and a rate of 14.5% if the programming were made available. In San Diego, the predicted rate when the programming is not available is 7.4%, and if the programming is available, the penetration rate would be 11.1%. Therefore, we predict that DBS penetration is 40.5% lower in Philadelphia and 33.3% lower in San Diego than it would be if regional sports programming were available.

19. These results are best viewed as estimates of the impact of not having access to regional sports programming on an entrant in the MVPD market. The regional sports programming in Philadelphia and San Diego has not been available to DBS operators since 1997.¹¹ We therefore view the regression results as an imprecise estimate of the impact on DBS operators if regional sports programming were withdrawn from the operators after having been available for an extended period of time. An alternative approach to estimating the effects of RSN withdrawal involves examining viewership statistics. An average of [REDACTED] to [REDACTED] of households with access to CSN Philadelphia or CSN Mid-Atlantic view the network in a four-week period and an average of [REDACTED] to [REDACTED] in a one-week period.¹² A reasonable estimate of the households that would switch MVPDs to retain access to regional sports programming may be that it is comprised of those that watch an RSN on a weekly basis.

20. An estimate of the minimum number of consumers likely to switch MVPDs can also be developed from instances in which regional sports programming has been withheld for short periods of time. In the *News Corp.-Hughes Order*, the Commission's staff estimated the effect of withdrawing the

¹⁰ We do not calculate a value for Charlotte because the coefficient is not statistically different from zero at the 95% level of confidence.

¹¹ Edward Moran, *Comcast Target of DirecTV Complaint Accused of Monopolizing Sports Coverage*, PHILADELPHIA DAILY NEWS, Sept. 25, 1997, at 84; Jay Posner, *Padres to Become HD-TV Showpiece*, SAN DIEGO UNION-TRIBUNE, Feb. 20, 2004, at D-9.

¹² Comcast Dec. 22, 2005 Response to Information Request III.B.5.

Yankees Entertainment and Sports Network (YES), a regional sports network carrying New York Yankees baseball games and New Jersey Nets basketball games, from Cablevision in 2002 and 2003.¹³ Cablevision is a cable operator whose cable systems are entirely within the New York DMA. DIRECTV was able to carry this regional sports programming during the period when Cablevision was unable to carry the programming. The number of additional subscribers that DIRECTV acquired during each month of the withdrawal was estimated using confidential information submitted under the protective orders in the proceeding. The resulting analysis is not available in the current record. Instead we rely on the *News Corp.-Hughes* analysis of Cablevision's SEC filings to examine the impact of temporary withholding of regional sports programming.¹⁴ The analysis indicates that, out of the 3 million subscribers and 4.3 million homes passed by Cablevision, it lost approximately 64,000 subscribers during the year it did not carry YES. This equates to a loss of 2.1% of its subscribers and 1.5% of its share of households.

III. APPLYING THE UNIFORM PRICE INCREASE MODEL TO REGIONAL SPORTS NETWORKS

21. We use equation (4), above, to predict the transactions' impact on RSN affiliation fees. The equation requires a number of values. Since EchoStar and DIRECTV are the Applicants' largest competitors, we focus our analysis on the uniform price increase that would result if one of them were the target of the strategy. However, as the name indicates, a uniform price increase would be borne by all MVPDs.

22. *Homes Passed by the Applicants.* The Applicants have submitted estimates of the number of basic subscribers to cable systems they manage in each DMA for the period prior to and following the transactions.¹⁵ We adjust these totals by also including basic subscribers served by systems that are attributed to, but not managed by, the Applicants. Since the Applicants are unable to provide subscriber counts by DMA for some attributable non-managed systems, we must estimate the likely number of subscribers to these systems.¹⁶ Eighty-three DMAs are affected by this estimation procedure. We allocate the total number of current basic subscribers reported by the Applicants for each attributed non-managed entity to each of the communities served by the entity based on historical estimates of the basic cable subscribers in each of the communities. These community-level estimates are then aggregated at the DMA level to obtain an estimate of the number of attributable subscribers in each DMA. We then calculate an estimate of the fraction of homes each Applicant passes by dividing the number of attributable subscribers in each DMA by the total number of cable subscribers in the DMA as estimated by Nielsen Media Research.

23. *Relative Market Shares of Competing MVPDs.* The uniform price increase model requires information on the change in the relative market shares of competing MVPDs when they do or do not carry the RSN.¹⁷ Our estimates of the impact of withholding based on the situations in San Diego and Philadelphia indicate that the share of households purchasing DBS service is between 33% and 40% lower in those DMAs than in areas where DBS can carry regional sports programming. We do not have any sources to estimate the impact on the market share of a DBS operator that does not carry regional sports programming when the unintegrated cable operator also does not carry the programming. Intuitively, we would expect the impact to be relatively minor since subscribers would have no incentive

¹³ *News Corp.-Hughes Order*, 19 FCC Rcd at 646-48, App. D, ¶¶ 39-47.

¹⁴ *Id.* at 648, App. D, ¶ 46.

¹⁵ Applicants June 21, 2005 Ex Parte; Time Warner Feb. 23, 2006 Ex Parte.

¹⁶ See Comcast Dec. 22, 2005 Response to Information Request II.G; Time Warner Dec. 22, 2005 Response to Information Request II.G.

¹⁷ This information is embodied in $\left(\frac{\sigma^{--}}{\sigma^{++}}\right)$ and $\left(\frac{\sigma^{+-}}{\sigma^{++}}\right)$ in equation (4).

to switch between MVPDs. However, it is possible that there would be some impact, as some households might drop MVPD service altogether if regional sports programming becomes unavailable. Accordingly, we adopt two estimates of this value: 0% and 2%.¹⁸

24. *Bargaining Power.* The RSN's relative bargaining power is reflected in the γ_0 and γ_1 terms in equation (4). We do not have any information on the relative bargaining power of the parties; however, as long as the transactions do not change the amount of bargaining power, the relative increase in RSN affiliation fees is not influenced by the amount of bargaining power. As equations (2) and (3) indicate, bargaining power does influence the absolute price level. Throughout our analysis, we adopt a standard solution to bargaining games by assuming that the parties split the gains from trade ($\gamma_0 = \gamma_1 = 0.5$).¹⁹

25. *Profit Margin of the Competing MVPD.* The uniform price increase model requires the per-subscriber profit margin earned by the competing MVPD in order to use equations (2) and (3) to estimate the absolute impact of the transactions on RSN affiliation fees. No other party has proffered an alternative value, and we adopt DIRECTV's estimate of \$23 per subscriber.²⁰

26. *Predicting the Transactions' Effect on RSN Affiliation Fees.* Using the values developed in the previous paragraphs, we estimate the percentage change, as a result of the transactions, in the affiliation fee of an RSN that is owned by the largest Applicant in a DMA using equation (4). We must make assumptions about the loss of subscribers if the MVPD chooses not to carry the RSN that other MVPDs in the area do carry. We adopt the assumption that the MVPD's share of subscribers would fall by 15% over an extended period of time.²¹ This value is less than the estimated effect in Philadelphia and San Diego and [REDACTED] the fraction of households that watch Comcast's established RSNs on a weekly basis. We examine two sets of further assumptions to construct these estimates. The first set of assumptions relies on the simplifying assumption that the MVPD's market share when neither it nor a competing MVPD carries an RSN is the same as when both MVPDs carry the RSN ($\sigma^{--} = \sigma^{++}$). Under this simple assumption, the percentage change in the affiliation fee of the RSN simplifies to equation (5). The alternative assumption accounts for the possibility that some consumers will not purchase MVPD service when an RSN is not carried. Specifically, we assume that 2% of current MVPD customers would not purchase MVPD service if regional sports were not available from any of the MVPDs in the market.²²

27. There are 94 DMAs that are affected by the transactions. Under the simple assumption, the model of uniform price increases predicts that RSN fees will increase by at least 5% in 39 of the DMAs. When the alternative assumption is used, the model predicts increases of at least 5% in 36 DMAs. Table A-2 presents the estimated impact of the transactions in each of 39 Key DMAs.²³ In addition, we estimate the net present value of the absolute increase in payments to an RSN using equations (2) and (3).²⁴ Under either scenario, 15 Key DMAs are predicted to see an increase in RSN fees of at least 5%. The net present value of the increased payments for carriage of the RSNs in these 15 Key DMAs is

¹⁸ We select 2% as the alternative assumption based on Cablevision's loss of 2.1% of its subscribers when it did not offer YES.

¹⁹ DREW FUDENBERG AND JEAN TIROLE, GAME THEORY 117 (1991).

²⁰ DIRECTV Surreply, Ex. A at 13-14.

²¹ This implies that $\left(\frac{\sigma^{+-}}{\sigma^{++}} \right) = 0.85$

²² This implies that $\left(\frac{\sigma^{--}}{\sigma^{++}} \right) = 0.98$.

²³ The Key DMAs are those that are home to a professional sports team that is a member of Major League Baseball, the National Basketball Association, the National Football League, or the National Hockey League.

²⁴ We use a 10% annual discount factor for this calculation. The Commission also used this value in *News Corp.-Hughes. News Corp.-Hughes Order*, 19 FCC Rcd at 635, App. D, ¶ 4.

[REDACTED] million under the simple assumption and [REDACTED] million under the alternative assumption.

28. Table A-2

Key DMA	Percent of Homes Passed by Largest Applicant		Estimated Change in RSN Affiliation Fee and Net Present Value of Change in Payments to RSN	
	Before Transaction	After Transaction	$(\sigma^{--} = \sigma^{++})$	$(\sigma^{--} \neq \sigma^{++})$
Atlanta, GA	49.6%	55.1%	11.1% \$ 13.2 million	8.5% \$ 11.4 million
Baltimore, MD	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Boston, MA	85.8%	94.4%	10.1% \$ 5.1 million	8.5% \$ 4.5 million
Buffalo, NY	78.7%	95.3%	21.2% \$ 5.0 million	17.7% \$ 4.3 million
Charlotte, NC	57.6%	63.8%	10.7% \$ 6.0 million	8.4% \$ 5.2 million
Chicago, IL	[REDACTED]	[REDACTED]	0.0% -	0.0% -
Cincinnati, OH	61.9%	68.9%	11.4% \$ 4.9 million	9.1% \$ 4.2 million
Cleveland, OH	44.2%	77.8%	75.9% \$ 32.3 million	56.3% \$ 28.0 million
Columbus, OH	50.1%	58.4%	16.5% \$ 6.9 million	12.6% \$ 6.0 million
Dallas, TX	49.2%	53.8%	9.4% \$ 11.7 million	7.2% \$ 10.1 million
Denver, CO	[REDACTED]	[REDACTED]	0.0% -	0.0% -
Detroit, MI	[REDACTED]	[REDACTED]	0.0% -	0.0% -
Green Bay, WI	60.4%	60.4%	0.0% -	0.0% -
Houston, TX	[REDACTED]	[REDACTED]	0.0% -	0.0% -
Indianapolis, IN	[REDACTED]	[REDACTED]	0.0% -	0.0% -
Jacksonville, FL	66.4%	84.3%	27.0% \$ 7.4 million	21.9% \$ 6.4 million
Kansas City, KS	[REDACTED]	[REDACTED]	0.0% -	0.0% -
Los Angeles, CA	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Memphis, TN	56.4%	55.5%	-1.5% \$ -0.6 million	-1.2% \$ -0.5 million
Miami, FL	61.5%	69.4%	13.0% \$ 9.7 million	10.4% \$ 8.4 million
Milwaukee, WI	75.2%	75.2%	0.0% -	0.0% -
Minneapolis, MN	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Nashville, TN	60.2%	60.2%	0.0% -	0.0% -
New Orleans, LA	6.8%	6.8%	0.0% -	0.0% -
New York, NY	23.0%	23.0%	0.0% -	0.0% -
Orlando, FL	[REDACTED]	[REDACTED]	0.0% -	0.0% -
Philadelphia, PA	79.2%	80.9%	2.2% \$ 2.7 million	1.8% \$ 2.3 million
Phoenix, AZ	0.0%	0.0%	0.0% -	0.0% -
Pittsburgh, PA	41.6%	66.6%	60.2% \$ 23.7 million	43.9% \$ 20.5 million
Portland, OR	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Sacramento, CA	74.0%	74.0%	0.0% -	0.0% -
Salt Lake City, UT	[REDACTED]	[REDACTED]	0.0% -	0.0% -
San Antonio, TX	80.0%	80.0%	0.0% -	0.0% -
San Diego, CA	26.9%	35.7%	32.5% \$ 11.4 million	20.7% \$ 9.9 million
San Francisco, CA	91.0%	91.7%	0.8% \$ 0.7 million	0.7% \$ 0.6 million
Seattle, WA	[REDACTED]	[REDACTED]	0.0% -	0.0% -
St. Louis, MO	[REDACTED]	[REDACTED]	0.0% -	0.0% -
Tampa, FL	[REDACTED]	[REDACTED]	0.0% -	0.0% -
Washington, DC	45.9%	61.0%	33.0% \$ 33.2 million	24.7% \$ 28.8 million